

REMARKS

Claims 1 - 33 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Flemming (U.S. Pat. No. 3,955,118). Applicant respectfully disagrees with the Examiner's reading of Flemming. No new matter has been entered. Reexamination and reconsideration of the application is respectfully requested.

Applicant's claim 1 recites, *inter alia*, "at least first and second cathodes separated by a gap, said first cathode comprising a first exposed cathode surface and a first magnetic polarity, said second cathode comprising a second exposed cathode surface and a second magnetic polarity, and said first exposed cathode surface oriented non-parallel to said second exposed cathode surface." The Examiner submits that Flemming teaches a structure wherein "left side item 13" corresponds to Applicant's first cathode and "right side item 13" corresponds to Applicant's second cathode.

Flemming teaches an apparatus comprising two cathodes, where those two cathodes include "base cathode 12" and "extraction cathode 13." Col. 2 at Lines 49-53. The Examiner incorrectly posits that cathode 13 comprises two separate cathode elements, where those two cathode elements have differing magnetic polarities. Flemming's FIG. 1 is a "cross-sectional view" of Flemming's ion source. Col. 2 at Lines 34-35. Therefore, Flemming's cathode 13 does not comprise two separate cathode elements. Rather, Flemming's cathode 13 comprises a single, circular cathode element having a hole formed in the center.

Applicant's claims 1 further recites, *inter alia*, "a set of magnets operative to generate a magnetic field exiting from one of the cathodes and entering the other of the cathodes, thereby crossing the gap." Flemming nowhere teaches an apparatus comprising a set of magnets.

Rather, Flemming teaches an apparatus comprising a single coil 14. Once again, because Flemming's FIG. 1 is a cross-sectional view, the two portions of coil 14 shown in FIG. 1, i.e. one portion to the left of anode 11 and one portion to the right of anode 11, comprise portions of a single annular coil.

Moreover, Flemming nowhere teaches or suggests an apparatus comprising a magnetic field which exits a first cathode, crosses a gap between that first cathode and a second cathode, and enters the second cathode. Quite to the contrary, Flemming teaches an apparatus which includes an axial magnetic field disposed within the bore of a hollow anode 11. Col. 2 at Lines 62-63. Flemming nowhere teaches an apparatus wherein a magnetic field exits either cathode 12 or cathode 13, passes through a gap separating the two cathodes, and enters the other cathode, as recited in Applicant's claim 1.

It is well-settled that "[t]o establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art." MPEP 2143.03; *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). Applicant's claim recites a plasma treatment apparatus comprising, *inter alia*, at least first and second cathodes separated by a gap, said first cathode comprising a first exposed cathode surface and a first magnetic polarity, and said second cathode comprising a second exposed cathode surface and a second magnetic polarity, where the first exposed cathode surface is oriented non-parallel to the second exposed cathode surface.

Flemming nowhere teaches or suggests an apparatus comprising at least first and second cathodes separated by a gap, said first cathode comprising a first exposed cathode surface and a first magnetic polarity, and said second cathode comprising a second exposed cathode surface

and a second magnetic polarity, where the first exposed cathode surface is oriented non-parallel to the second exposed cathode surface. In addition, Flemming nowhere teaches or suggests an apparatus comprising a set of magnets. Moreover, Flemming nowhere teaches or suggests an apparatus comprising a magnetic field which exits a first cathode, crosses a gap between that first cathode and a second cathode, and enters the second cathode. This being the case, Applicant respectfully submits that claim 1 is patentable over Flemming.

Claims 2 through 15, inclusive, depend, directly or indirectly, from claim 1. Under 35 U.S.C. § 112, fourth paragraph, "a claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers." Therefore, claims 2 through 15, inclusive include all the elements of claim 1. "If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious." MPEP 2143.03; *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed.Cir. 1988).

For the reasons set forth above, Applicant respectfully submits that Flemming does not render obvious Applicant's claim 1. This being the case, Applicant further respectfully submits that claims 2 through 15, as amended herein, are non-obvious over Flemming.

Applicant's claim 16 recites an apparatus comprising, *inter alia*, a set of magnets operative to generate a magnetic field exiting from one of the cathodes and entering the other of the cathodes, thereby crossing the gap. Flemming nowhere teaches or suggests an apparatus comprising a set of magnets. Moreover, Flemming nowhere teaches or suggests an apparatus comprising a magnetic field which exits a first cathode, crosses a gap between that first cathode and a second cathode, and enters the second cathode. This being the case, Applicant respectfully submits that claim 16 is patentable over Flemming.

Claim 17 depends from claim 16. Under 35 U.S.C. § 112, fourth paragraph, “a claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers.” Therefore, claim 17, as amended herein, includes all the elements of claim 17, as amended herein. “If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious.” MPEP 2143.03; *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed.Cir. 1988).

For the reasons set forth above, Applicant respectfully submits that Flemming does not render obvious claim 16. This being the case, Applicant further respectfully submits that claim 17 is non-obvious over Flemming.

Applicant’s claim 18 recites an apparatus comprising, *inter alia*, “a set of magnets operative to generate a magnetic field exiting from one of the cathodes and entering the other of the cathodes, thereby crossing the gap.” Flemming nowhere teaches or suggests an apparatus comprising a set of magnets. Moreover, Flemming nowhere teaches or suggests an apparatus comprising a magnetic field which exits a first cathode, crosses a gap between that first cathode and a second cathode, and enters the second cathode. This being the case, Applicant respectfully submits that claim 18 is patentable over Flemming.

Claims 19 and 20 depend from claim 18. Under 35 U.S.C. § 112, fourth paragraph, “a claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers.” Therefore, claims 19 and 20 include all the elements of claim 18. “If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious.” MPEP 2143.03; *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed.Cir. 1988).

For the reasons set forth above, Applicant respectfully submits that Flemming does not

render obvious claim 18. This being the case, Applicant further respectfully submits that claims 19 and 20 are non-obvious over Flemming.

Applicant's claim 21 recites an apparatus comprising, *inter alia*, "a set of magnets operative to generate a magnetic field exiting from one of the cathodes and entering the other of the cathodes, thereby crossing the gap." Flemming nowhere teaches or suggests an apparatus comprising a set of magnets. Moreover, Flemming nowhere teaches or suggests an apparatus comprising a magnetic field which exits a first cathode, crosses a gap between that first cathode and a second cathode, and enters the second cathode. This being the case, Applicant respectfully submits that claim 21 is patentable over Flemming.

Claims 22 through 26, inclusive, depend from claim 21. Under 35 U.S.C. § 112, fourth paragraph, "a claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers." Therefore, 22 through 26, inclusive, include all the elements of claim 21, as amended herein. "If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious." MPEP 2143.03; *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed.Cir. 1988).

For the reasons set forth above, Applicant respectfully submits that Flemming does not render obvious claim 21. This being the case, Applicant further respectfully submits that claims 22 through 26, inclusive, are non-obvious over Flemming.

Claims 27 through 33, inclusive, depend from two or more of claims 1, 16, 18, or 21. Under 35 U.S.C. § 112, fourth paragraph, "a claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers." "If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious."

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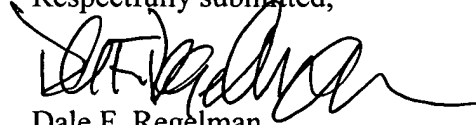
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MPEP 2143.03; *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed.Cir. 1988).

For the reasons set forth above, Applicant respectfully submits that Flemming does not render obvious any of claims 1, 16, 18, or 21. This being the case, Applicant further respectfully submits that claims 27 through 33, inclusive, are non-obvious over Flemming.

Having dealt with all of the outstanding objections and/or rejections of the claims, Applicant submits that the application as amended is in condition for allowance, and an allowance at an early date is respectfully solicited. In the event there are any fee deficiencies or additional fees are payable, please charge them (or credit any overpayment) to our Deposit Account No. 502262.


Respectfully submitted,



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I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450 on October 15, 2003, at Tucson, Arizona.

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